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No of Pages : 2 **Course Code : 13PD31 / 13PP24**

Roll No:
(To be filled in by the candidate)

PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

SEMESTER EXAMINATIONS, OCTOBER / NOVEMBER - 2015

ME(FT&PT) – PDC / MANUFACTURING / PRODUCTION ENGG., Semester : 3/5

13PD31 / 13PP24 RAPID PROTOTYPING

Time : 3 Hours **Maximum Marks : 100**

INSTRUCTIONS:

1. Answer **ALL** questions from PART - A and Answer any **5** questions from PART - B. Question under PART – C is compulsory.

PART - A

Marks : 10 x 3 = 30

1. Despite the increase in complexity of shape and form of the products, product development time has been kept relatively shorter. Why?
2. Why is an additional support structure not required in SLS process?
3. What are the advantages and disadvantages of solid-based systems compared with liquid-based systems?
4. Define the principle of photo polymerization process.
5. Classify liquid-based RP machines based on their work volume.
6. Mention the finishing processes that are used for RP models and their necessity.
7. State the principle of LENS process with the help of an illustration.
8. What are the consequences of building a valid and invalid tessellated model?
9. Draw the flow chart to show the possibility of integrating reverse engineering with RP.
10. How does the Mimics software help in medical diagnostics?

PART - B

Marks : 5 x 10 = 50

11. With the help of a flow chart, explain the information work flow in Rapid Prototyping process.
12. Describe the process flow of Fused Deposition Modeling (FDM). Compare the laser-based LOM process with FDM systems with respect to their working principle, merits, demerits and applications.

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13. (a) Compare and contrast the laser-based stereolithography systems and the solid ground curing systems. State the advantages and disadvantages of the systems. (6)

    (b) Distinguish the various tasks of post processing of RP process. Name the RP processes that do not require post curing and the RP process that does not require cleaning. (4)

14. Spray metal deposition tooling technique is an indirect rapid tooling method to create moulds. Why? Discuss in detail the various stages of the same with suitable illustrations.

15. Explain in detail the 'JP system 5' process to build conceptual models.

16. What is the common format used by RP systems? Describe the format and illustrate with an example. State the pros and cons of using this format.

PART - C **Marks : 1 x 20 = 20**

17. Discuss the factors that influence the accuracy of RP process as applicable to tessellation, slicing, part building and part finishing processes.

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